DOCKET FILE COPY ORIGINAL

SIMON FRASER UNIVERSITY
SCHOOL OF ENGINEERING SCIENCE
Burnaby, British Columbia CANADA V5A 1S6

From: Tim Collings **Date:** Nov. 20, 1997

Tel: (604) 291-3817
Fax: (604) 291-4951

To: William F. Caton, Secretary FCC

Mr. Caton,

I finally completed my submission on the NPRM Docket ET 97-206 and enclose 10 copies in total. In addition, I enclose 8 copies of an 8 minute video that explains some of the technical details of my proposal. Please feel free to circulate this to Commissioners and staff.

You'll probably be swamped by Monday when all of the comments are due but please do not hesitate to contact me if you have any questions. I will make myself available to clarify any questions you might have, or I could provide an actual demonstration of the technology to you if necessary. You can also email me at collings@cs.sfu.ca.

The disk has my comments in WordPerfect format - split into formal comments (FCC97206.wp) and detailed technical appendices (app97206.wp). The 10 copies of my submission contain both comments and appendices.

Also I have enclosed a package for Neal McNeil in the Office of Engineering & Technology which I would appreciate if you could forward to him.

Thank you for your attention in this matter.

Tim Collings

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of **ET Docket No. 97-206**

Technical Requirements to Enable Blocking of Video Programming based on Program Ratings - NOTICE OF PROPOSED RULEMAKING (NPRM)

Comments of:

Tim Collings, Professor, Simon Fraser University
Ervin Duggan, President, Public Broadcasting System (PBS)
Crystal J. Gips, Associate Dean, California State University Northridge
The Los Angeles Times News Service
The School Libraries Association of Los Angeles County
The Children's Libraries Association of Los Angeles County
Better Viewing Magazine

Introduction

There has been extensive discussion over the past two years with regard to the new TV Parental Guidelines. The revised industry proposal is now supported by leading family and child advocacy groups, as well as television broadcasters, cable systems, networks, and television production companies. The guidelines are modeled after the movie ratings and classify programs into one of six categories: TV-Y, TV-Y7, TV-G, TV-PG, TV-14 and TV-MA. These guidelines also provide additional 1-letter symbols to indicate the presence of suggestive dialog (D), coarse language (L), sexual situations (S), violence (V), and fantasy violence (FV). Hopefully, the TV Parental Guidelines will be sufficient for parents to screen out "harmful" or "negative" content.

In a speech to the UCLA Center for Communication Policy in May, 1996, PBS President Ervin Duggan asserted that "we in the television have an obligation to do more that simply say our programs will do no harm" and proposed enhanced voluntary ratings that would signal children's programs with educational value. "I want to suggest an addition to the ratings system that has the potential to create 'welcome mats' for programs worth watching, not just warnings about what not to watch," said Duggan.

There are many organizations that assist parents and children in making healthy viewing choices. Children do enjoy good TV programs if they know about them. This proves that quality and popularity can go together. The potential for "healthy" or "positive" ratings has yet to be discussed extensively or examined from a technological perspective in a significant public forum although we have successfully tested this approach in Canada.

The Los Angeles Times publishes a weekly column, called "TV Smarts", which cites broadcast and cable programs, even programs on commercial television, that contain materials taught in public schools and material which appears in standardized competitive exams. They compile this list in consultation with Crystal J. Gips, Ed. D., Associate Dean of the School of Education at California State University Northridge. This college is the largest teacher training institution for teachers entering the California teaching system. The Los Angeles Times News Service feeds the TV Smarts program list to 600 newspapers (400 in the United States, and 200 overseas) and recommends that every town with a newspaper and teacher training college create a similar column. Members of library associations across the United States, including the School Libraries and Children's Libraries Associations of Los Angeles and Ventura Counties, put out displays of books and materials related to the TV Smarts programs. This comprehensive system alerts parents and children to programs and materials covered in school curriculum and standard tests.

"Better Viewing" magazine publishes a bi-monthly guide to programs that are designed to educate, inform and entertain. The magazine has a circulation of over 50,000 and is another excellent example of a constructive effort to help children and their families view television in a more positive and informative way. The easy-to-read and colorful magazine is chock full of articles that show how to use television to foster communications between parents and children about difficult topics and developing good viewing habits.

In section 2, 10, 11 and 12 of the NPRM, we note the commission's preference to "giving parents the flexibility to choose the rating system that best meets their needs" as well as the commission's preference for an "open, flexible standard that will accommodate multiple rating systems". We will outline a system that enhances the TV Parental Guidelines with additional ratings capabilities and controls which are easy to implement by both broadcasters and TV manufacturers, and easy for parents to use and understand. The system does not add to viewer confusion or significant added receiver costs, and can handle any rating systems that may be developed in the future without any need to modify the receiver hardware or software - the system is fully downloadable.

An overlooked capability of the V-chip is that, while it can filter out inappropriate television for children, it can also be used to highlight educational programs that benefit children. If more parents start to pay attention to what their children are watching, they will take an interest in finding the good on TV while they are blocking out the bad. The FCC correctly notes that the EIA-608 methodology can be used to transmit more than one rating for the same program. In Canada, we have successfully tested this concept and have adopted the EIA-608 interim standard to encode multiple ratings from broadcasters and organizations into the same video program. Sending this additional information in the data stream to accommodate multiple ratings consumes only 1% of additional XDS (Extended Data Services) bandwidth. At present, 3% of the XDS bandwidth is used for TV Parental Guidelines, so an additional 1% is a very small price to pay for a system that offers very significant public benefits.

There are many organizations like PBS, the LA Times, and Better Viewing that promote and publicize positive programs. Some have even developed their own rating and classification systems. The following are several sample rating systems.

- PBS, and others, have proposed that the FCC's recently-approved "E/I" (Educational and Informational) designation, requiring broadcasters to carry three hours of educational programming each week, meet certain minimum standards:
  (i) have clearly-defined educational goals and objectives,
  (ii) involve experts in program design and production,
  (iii) be targeted to a specific age group (such as 6-8 year olds, not simply children 2-11),
  (iv) create educational support materials,
  (v) conduct research to ascertain educational effectiveness,
  (vi) tackle at least one of nine subject areas essential for school-readiness,
  (vii) in the case of programs for children under age 6, be uninterrupted by commercials.

- TV Smarts, a weekly column in the Los Angeles Times and other newspapers, cites programs that contain material on subjects taught in public schools and material which appears in standardized competitive exams, specifying when the program is appropriate for:
  - "Elementary"
  - "Middle School"
  - "High School"

- OKTV (Our Kid's TV) helps parents identify healthy programs for their children. OKTV has developed a rating system that recommends programs in five categories:
  - "OK for Toddlers"
  - "OK for 3 years and older"
  - "OK for 3 years and older (parents should co-view)"
  - "OK for 8 years and older"
  - "OK for 8 years and older (parents should co-view)"

- Better Viewing Magazine publishes a bi-monthly guide to programs that "educate, inform and entertain" in four categories:
  - "Family Viewing"
  - "Preschool (ages 1-4)"
  - "Elementary (ages 5-11)"
  - "Teens & Tweens (ages 12-17)"

Positive-Option Ratings

"Positive-option" ratings are optional because they wouldn't be applied to every program. The TV Parental Guidelines are characterized by their "negative-option" action - all programs are received unless the viewer sets limits and opts to block programs based on their undesirable or objectionable rating. Every program must be assigned a negative-option label for this type of system to work. If TV Parental Guidelines were not applied to every program, the parent would be left wondering if there was cause for concern because of the missing rating information. Practically speaking, only the broadcasters themselves are able to review and rate every program with negative-option labels before the program goes to air.

Initially, positive option ratings would only be applied to a small body of programs meeting certain criteria. However, one would hope that the use of positive-option ratings would increase the number of educational programs by creating an incentive for networks and producers to compete in the arena of quality and educational appeal in programming. Broadcasters, producers and the public could make their own program recommendations to positive-option rating organizations thus ensuring that there is complete and open access to the system. Maybe some day we will even have public awards for MVPs (most valuable programs).

The main advantage of positive-option ratings is that they cannot be used to block programs. In fact positive-option ratings, when attached to programs and selected by the viewer, will un-block any program that might otherwise be blocked based on the TV Parental Guidelines. A positive-option rating will always over-ride a negative-option blocking decision. Positive-option ratings would act as a beacon for parents seeking programs which suit their needs. Furthermore, these positive-option ratings can be updated and downloaded to the television set without having to change or modify any of the hardware or software in the receiver itself. This guarantees that ratings can be refined and improved over time, or new rating systems can be added in future without risk of technological obsolescence in receivers sold next year.

There are several key elements required to integrate positive-option ratings into the existing TV rating system's regulatory and technical framework:

(i) a ratings transport protocol to carry the data in line 21,
(ii) industry policies and procedures for inserting rating codes into line 21,
(iii) qualified organizations that are entitled to ratings carriage,
(iv) clearly-defined criteria describing the organization's rating system, and
(v) an organizational commitment to rate a sufficient body of programs.

The EIA-608 specification was used to implement the Canadian tests and has already been approved by R4.3 as an interim standard so the technical requirements in (i) and (ii) have already been met. Each of the organizations mentioned would meet the latter 3 criteria. The number of positive-option rating systems would be quite small and it would make sense for like-minded organizations, with common goals, to work together on comprehensive positive-option rating systems. We believe that all parties, including broadcasters, children's advocacy groups, TV manufacturers, and the public would be well-served by pursuing this approach.

The advantages of positive-option rating systems are many:

- positive-option ratings will always un-block programs which might otherwise be blocked by TV Parental Guidelines
- viewers can select from TV Parental Guidelines as well as several positive-option rating systems depending on which ones best suit their needs
- the data format of positive-option ratings is easily added to the EIA-608 Program Rating packet that is used to transmit TV Parental Guidelines
- it is easier for rating organizations to assign positive-option ratings to a handful of suitable programs than it is to assign negative-option ratings to every program
- viewers have the option of using positive-option ratings, in addition to TV Parental Guidelines, therefore it will not complicate the system
- the ratings are downloadable so that future additions or changes to rating systems can be accommodated
- TV manufacturers could offer more sophisticated receivers with advanced features without any risk of technical obsolescence

Implementation

I believe that more rating choices will help parents and children know how to find what's wonderful, to understand why some TV is not healthy for young audiences, and to learn how to handle the problems and pleasures available on our small screens.

It is not the intent of this proposal to introduce further delay to implementation and encoding of TV Parental Guidelines. Broadcasters have already made a public commitment to begin encoding TV Parental Guidelines within 180 days of the ratings agreement that was reached with children's groups on July 10, 1997 in Washington, D.C.

Indeed, there are set-top products which will be made available to consumers as soon as encoding begins. If broadcasters do not meet their commitment to begin encoding TV Parental Guidelines in video transmissions by January 8, 1998, the Commission should specify the latest date by which encoding should begin. The advantage of positive-option ratings is that any ratings systems that may be developed in the future can be added to the system at any time. There is no need to delay encoding of TV Parental Guidelines any longer.

Neither is it the intent of this submission to delay the FCC's proposed timeline for manufacturers to incorporate blocking technology. It is reasonable to expect that half of all new TV product models shipped between July 1998 and July 1999 be equipped with blocking technology. Even if a flexible rating standard was to be ordered, this should not delay implementation since if it was based on the existing EIA-608 framework.

The appendices that follow outline the technical requirements for integrating positive-option ratings into the interim EIA-608 standard. Appendix A outlines the method for transmitting TV Parental Guidelines and illustrates how positive-option ratings are added to the existing ratings data in the Program Rating packet. Appendix B describes the downloadable aspect of the technology that allows positive-option ratings to evolve, when improvements are made to existing ratings or when new rating systems are introduced, without requiring any change to the receiver hardware or software.

Appendix A: EIA-608 Enhanced Program Rating Packet

Positive-option ratings can be appended to the existing Program Rating packet used to transmit TV Parental Guidelines, the first 2 characters of which are already defined:

Character	b6	b5	b4	b3	b2	b1	b0
Rating	1	D	a1	a0	r2	r1	r0
TV Guidelines	1	(F)V	S	L	g2	g1	g0

A program rated "TV-PG", with moderate violent (V) content, would be encoded as follows:

Character	b6	b5	b4	b3	b2	b1	b0
Rating	1	0	0	1	0	0	0
TV Guidelines	1	1	0	0	1	0	0

The four (4) positive-option ratings described previously can be encoded in 9 bits of additional XDS data. OKTV and Better Viewing ratings can be encoded with 3 bits each. TV Smarts ratings can be encoded with 2 bits, and the "E/I" designation needs only 1 bit. Additional bits can be allocated to other organizations who might rate programs according to different criteria based on their member's concerns, interests and values. In addition to the TV Parental Guidelines "TV-PG-V" rating, suppose the program was assigned the following positive-option ratings:

(i) OKTV designates the program "OK 8yrs Co-View",
(ii) Better Viewing deems it to be suitable for "Teens and Tweens",
(iii) TV Smarts believes it is appropriate for "Middle School", and
(iv) The program meets "E/I" guidelines.

Therefore if the parent had restricted viewing of "TV-PG-V" programs for example, the program would be un-blocked if the parent allowed viewing of programs receiving any one of the above positive-option ratings.

A positive-option rating will always over-ride a negative-option blocking decision. "Schindler's List" was recently broadcast on TV and received a "TV-MA (SV)" label. TV Smarts recommended this program for the "High School" curriculum and therefore, if the viewer chose this designation, "Schindler's List" would have been un-blocked.

The OKTV ratings would be encoded with 3 bits, as follows:

OK2	OK1	OK0	Scale	Rating
0	0	0	0	N/A - not applicable
0	0	1	1	"OK Toddlers"
0	1	0	2	"OK 3yrs"
0	1	1	3	"OK 3yrs Co-view"
1	0	0	4	"OK 8yrs"
1	0	1	5	"OK 8yrs Co-view"
1	1	0	6	undefined
1	1	1	7	undefined

Better Viewing ratings can also be encoded with 3 bits:

BV2	BV1	BV0	Scale	Rating
0	0	0	0	N/A - not applicable
0	0	1	1	"Family"
0	1	0	2	"Pre-School"
0	1	1	3	"Elementary"
1	0	0	4	"Teens & Tweens"
1	0	1	5	undefined
1	1	0	6	undefined
1	1	1	7	undefined

TV Smarts only needs 2 bits to encode their ratings:

TS1	TS0	Scale	Rating
0	0	0	N/A - not applicable
0	1	1	"Elementary"
1	0	2	"Middle School"
1	1	3	"High School"

Finally, the "E/I" designation can be encoded in a single bit:

E/I	Scale	Rating
0	0	N/A - not applicable
1	1	"E/I"

These ratings are appended to the Program Rating packet as shown here:

Character	b6	b5	b4	b3	b2	b1	b0
Rating	1	D	a1	a0	r2	r1	r0
TV Guidelines	1	(F)V	S	L	g2	g1	g0
Positive Rating #1	1	OK2	OK1	OK0	BV2	BV1	BV0
Positive Rating #2	1	TS1	TS0	E/I	0	0	0

In this particular example the program is rated:

(1) "TV-PG (V)",	(g2,g1,g0) = (1,0,0) and D=L=S=0, V=1
(2) "OK 8yrs (Co-View)",	(OK2,OK1,OK0) = (1,0,1)
(3) "Teens and Tweens",	(BV2,BV1,BV0) = (1,0,0)
(4) "Middle School",	(TS1,TS0) = (1,0)
(5) "E/I"	E/I = 1

The encoded bits for all 4 characters in the PR packet would be as follows:

Character	b6	b5	b4	b3	b2	b1	b0
Rating	1	0	0	1	0	0	0
TV Guidelines	1	1	0	0	1	0	0
Positive Rating #1	1	1	0	1	1	0	0
Positive Rating #2	1	1	0	1	0	0	0

But how did we decide to allocate these bits in the second 2 characters?
What happens if we want to add another organization's rating system?
What if some of these ratings change in the future?

The real advantage of positive-option ratings is that they are fully downloadable so that future additions/changes to rating systems can be accommodated without any need to change or re-configure the TV chassis hardware or software.

A simple protocol is used to modify and download rating system descriptions as they evolve. This protocol is outlined in Appendix B.

Appendix B: EIA-608 Proposal for PRCC Packet Transmission

The Program Rating (PR) packet (Current Class, Type 05h) is used to send rating information, while Program Rating Configuration and Control (PRCC) packets (Channel Information Class, Type 05h) are used to "download" the various rating configuration information. The PRCC packets have the same format as other XDS packets. Packet lengths will vary depending on the complexity of the rating system descriptions.

The PR packet consists of one or more non-ASCII characters with bit 6 set high (b6=1) so that 6 bits are usable in each character. As PR characters are received, the first 2 characters are decoded according to the fixed TV Parental Guidelines bit format and, if additional PR characters are sent, these bits are dynamically allocated to various positive-option rating systems as defined by the PRCC packets previously downloaded to the receiver in the XDS Channel Information Class.

The format of the positive-option bits is not fixed. The format of these bits is defined and modified using PRCC packets. Let's examine how the PRCC information provides this flexibility.

Program Rating Configuration and Control (PRCC) Packets

We use the Channel Information Class in the XDS specification to transmit the rating system configuration information. The classification system format is described using several PRCC packets. Each PRCC packet is used to define 1 of 4 types of configuration data: System, Category, Level and Sync. Each PRCC packet can occupy up to 32 characters and the number of packets required to define a rating system will depend on the number of categories and levels defined in the system. This PRCC information is usually sent at very low priority and could be re-transmitted as infrequently as once every 30 minutes. Let's use our example to illustrate how the downloading process works.

Our positive-option ratings consist of four different categories of ratings:

(i) OKTV (3 bits),
(ii) Better Viewing (3 bits),
(iii) TV Smarts (2 bits), and
(iv) E/I designation (1 bit).

This system can be described using several PRCC packets. Each PRCC packet is used to define 1 of the four (4) possible types of configuration data: System (Type 0), Category (Type 1), Level (Type 2), or Sync (Type 3) information.

The format of the first 2 characters in each PRCC packet is as follows:

Character	b6	b5	b4	b3	b2	b1	b0
PRCC #1 (Type, Name)	1	T1	T0	N3	N2	N1	N0
PRCC #2 (N_bits, N_elements)	1	B1	B0	E3	E2	E1	E0

The Type field [T1, T0] defines 1 of 4 PRCC types as follows:

Type	**Number**	**T1**	**T0**
System	0	0	0
Category	1	0	1
Level	2	1	0
Sync	3	1	1

Within each PRCC type we assign a 4-bit name in the Name field (N3,N2,N1,N0). Up to 16 names can be accommodated, placing a practical limit on the number of organizations that can be defined in the various categories, and the number of levels that can exist within each system.

The Bits field allows us to allocate 1-4 bits as necessary in order to accommodate the field width of the various systems and categories that need to be defined :

Bits	**B1**	**B0**
1-bit	0	0
2-bit	0	1
3-bit	1	0
4-bit	1	1

The Elements field (E3,E2,E1,E0) specifies the number of elements in the category or level, and varies from 1 (0,0,0,0) to 16 (1,1,1,1).

Following the first 2 PRCC characters, we send the ASCII System/Category/Level name (names should be limited to a maximum of 16 characters if possible).

(i) The PRCC System Packet [Type 0: (T1,T0) = (0,0)]:

It is possible to define multiple systems using the PRCC packet. The "System" packet can define up to 16 different systems by specifying the System Name, the number of System bits used, the number of Categories used in the System, followed by the ASCII name. System-type PRCC packets are used when different jurisdictions apply different rating standards.

In Canadian tests, we used 2 system bits to define 1 of 3 systems used for US, Quebec or Canadian broadcasts (each system is mutually exclusive) :

(i) the US system was assigned as System #1 (N3,N2,N1,N1) = (0,0,0,0)
(ii) the Canadian system was #2 (N3,N2,N1,N1) = (0,0,0,1)
(iii) the Quebec system was #3 (N3,N2,N1,N1) = (0,0,1,0).

The Canadian system classified programs in four categories: age (6 designations encoded in 3 bits), violence (4 levels in 2 bits), sexuality (4 levels in 2 bits), language (3 levels in 2 bits). The Elements field [E3,E2,E1,E0] is used to define the number of categories in the PRCC System packet. We had 4 categories in the Canadian System and therefore [E3,E2,E1,E0] = [0,0,1,1]. The Canadian PRCC System packet was transmitted as follows:

Character	b6	b5	b4	b3	b2	b1	b0
PRCC #1 (Type, Name)	1	0	0	0	0	0	1
PRCC #2 (N_bits, N_elements)	1	0	1	0	0	1	1
PRCC #3 - #8 (ASCII Bytes)	'C'	'A'	'N'	'A'	'D'	'A'	

After the first 2 characters, we sent the ASCII characters that correspond to the System name, 'CANADA'. Our sample positive-option rating system does not require the use of System-type PRCC packets since we assume that these rating systems apply in all jurisdictions.

(ii) The PRCC Category Packet [Type 1: (T1,T0) = (0,1)]:

This packet is used to specify the Category Number, the number of Category bits in use (1-4), the number of Levels used in the category, and the Category name. We can refer to the various positive-option systems as a single system consisting of several different categories. In our example we have 4 categories: OKTV (3 bits), Better Viewing (3 bits), TV Smarts (2 bits) and E/I (1 bit).

The OKTV category is assigned category #1 (N3,N2,N1,N0) = (0,0,0,0). It requires 3 bits to specify the rating (B1,B0) = (1,0) and there are 6 rating designations used (the first level, "N/A", counts as one level) so the elements field, (E3,E2,E1,E0) = (0,1,0,1). Therefore the OKTV PRCC Category packet is defined as follows:

Character	b6	b5	b4	b3	b2	b1	b0
PRCC #1 (Type, Name)	1	0	1	0	0	0	0
PRCC #2 (N_bits, N_elements)	1	1	0	0	1	0	1
PRCC #3 - #6 (ASCII Bytes)	'O'	'K'	'T'	'V'			

The Better Viewing category is assigned category #2 (N3,N2,N1,N0) = (0,0,0,1). It requires 3 bits to specify the rating (B1,B0) = (1,0) and there are 5 rating designations used so the elements field, (E3,E2,E1,E0) = (0,1,0,0). Therefore the Better Viewing PRCC Category packet is defined as follows:

Character	b6	b5	b4	b3	b2	b1	b0
PRCC #1 (Type, Name)	1	0	1	0	0	0	1
PRCC #2 (N_bits, N_elements)	1	1	0	0	1	0	0
PRCC #3 - #9 (ASCII Bytes)	'B'	'e'	't'	't'	'e'	'r'	' '
PRCC #10 - #16 (ASCII Bytes)	'V'	'i'	'e'	'w'	'i'	'n'	'g'

The TV Smarts category is assigned category #3 (N3,N2,N1,N0) = (0,0,1,0). It requires 2 bits to specify the rating (B1,B0) = (0,1) and there are 4 rating designations used so the elements field, (E3,E2,E1,E0) = (0,0,1,1). Therefore the TV Smarts PRCC Category packet is defined as follows:

Character	b6	b5	b4	b3	b2	b1	b0
PRCC #1 (Type, Name)	1	0	1	0	0	1	0
PRCC #2 (N_bits, N_elements)	1	0	1	0	0	1	1
PRCC #3 - #9 (ASCII Bytes)	'T'	'V'	' '	'S'	'm'	'a'	'r'
PRCC #10 - #11 (ASCII Bytes)	't'	's'					

Finally, the E/I category is assigned category #4 (N3,N2,N1,N0) = (0,0,1,1). It requires 1 bit to specify the rating, so (B1,B0) = (0,0). There are 2 rating designations used so the elements field, (E3,E2,E1,E0) = (0,0,0,1). Therefore the E/I PRCC Category packet is defined as follows:

Character	b6	b5	b4	b3	b2	b1	b0
PRCC #1 (Type, Name)	1	0	1	0	0	1	1
PRCC #2 (N_bits, N_elements)	1	0	0	0	0	0	1
PRCC #3 - #5 (ASCII Bytes)	'E'	'/'	'I'				

Each of the Category-type PRCC packets allow us to define each of the positive-option rating systems in use. If new systems are added, or the order is changed, these PRCC packets must be re-transmitted to re-configure the system.

(iii) The PRCC Level Packet [Type 2: (T1,T0) = (1,0)]:

The PRCC Level packet is used to specify the Level Number, the Elements field specifies the number of ASCII characters used in the Level name, and the Bits field is used to specify 2 characteristics of the Level. If B1=1, then the Level is part of a "scale", if B1=0, then each Level is interpreted as a separate entity which is unrelated to other Levels in the Category. If B0=1, then the Level is a positive-option label. The ASCII name follows the first 2 PRCC characters.

We won't define every Level definition in each of the four positive-option rating systems. As an example, the Better Viewing category has the 3rd designation defined for Elementary, (N3,N2,N1,N0) = (0,0,1,1). Each Level is part of a linear scale (i.e. Grades 9-12 follows Grades 4-8, which follows Grades 1-4) and these are positive-option labels so (B1,B0) = (1,1). 'Elementary' consists of 10 characters so the elements field, (E3,E2,E1,E0) = (1,0,0,1). Therefore the Elementary PRCC Level packet is defined as follows:

Character	b6	b5	b4	b3	b2	b1	b0
PRCC #1 (Type, Name)	1	1	0	0	0	1	1
PRCC #2 (N_bits, N_elements)	1	1	1	1	0	0	1
PRCC #3 - #9 (ASCII Bytes)	'E'	'l'	'e'	'm'	'e'	'n'	't'
PRCC #10 - #12 (ASCII Bytes)	'a'	'r'	'y'				

(iv) The PRCC Sync Packet [Type 3: (T1,T0) = (1,1)]:

The Sync packet is 2 characters long (no ASCII data) and designates the beginning of a new PRCC description. The name (N3,N2,N1,N0) keeps track of the most recent version number. If a receiver already has the most recent PRCC information stored there is no need to update the receiver memory. The 2nd PRCC character specifies the number of PRCC packets that define the system. In our example, we require: 1 PRCC Sync packet, 4 PRCC Category packets, and 12 PRCC Level packets (for a total of 17 packets). Here is the PRCC Sync packet:

Character	b6	b5	b4	b3	b2	b1	b0
PRCC #1 (Type, Version #1)	1	1	1	0	0	0	1
PRCC #2 (N_packets = 17)	1	0	1	0	0	0	0

(v) PRCC Packet Transmission

PRCC packets are used to describe the format of the positive-option rating bits that are transmitted in the PR packet. The PRCC data required to specify these rating systems should be sent along with other XDS data at a low priority such that the complete PRCC description is re-transmitted at least every 30 minutes. For our sample system we require: 1 PRCC Sync packet, 4 PRCC Category packets, and 12 PRCC Level packets (for a total of 17 packets) to completely specify the positive-option rating systems defined. Each packet is preceded by the Channel Information Class and Type characters [05h 05h] and ends with the End and Chksum characters [0Fh Chksum].

The packets in our example are sent as follows :

PRCC Type	PRCC #1	PRCC #2	ASCII String
Sync	71h	50h	
Category	50h	65h	'OKTV'
Level	61h	7Ah	'OK Toddlers'
Level	62h	76h	'OK 3yrs'
Level	63h	7Eh	'OK 3yrs Co-view'
Level	64h	76h	'OK 8yrs'
Level	65h	7Eh	'OK 8yrs Co-view'
Category	51h	64h	'Better Viewing'
Level	61h	75h	'Family'
Level	62h	79h	'Pre-School'
Level	63h	79h	'Elementary'
Level	64h	7Dh	'Teens & Tweens'
Category	52h	53h	'TV Smarts'
Level	61h	79h	'Elementary'
Level	62h	7Ch	'Middle School'
Level	63h	7Ah	'High School'
Category	53h	41h	'E/I'

(Any 1-bit categories need not send PRCC Level packets since they do not contain any more information than the 1-bit PRCC Category packets.) The decoder will synchronize to the PRCC data stream upon receipt of a valid PRCC Sync packet, with a new revision number, and will update internal PRCC data upon successful receipt of the last PRCC packet.

Attachment A

DOCUMENT OFF-LINE

This page has been substituted for one of the following:

o An oversize page or document (such as a map) which was too large to be scanned into the RIPS system.

o Microfilm, microform, certain photographs or videotape.

o Other materials which, for one reason or another, could not be scanned into the RIPS system.

The actual document, page(s) or materials may be reviewed by contacting an Information Technician. Please note the applicable docket or rulemaking number, document type and any other relevant information about the document in order to ensure speedy retrieval by the Information Technician.